

IsaGeoCoq, a port of GeoCoq with Isabelle/HOL

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Abstract. IsaGeoCoq is a port of GeoCoq 2.4.0, library written for Rocq, to Isabelle/HOL. A brief description of all the translated files is presented, as well as the difficulties encountered during the manual translation and useful resources such as the sledgehammer tool. Particular emphasis is placed on the evolution of the work: initially the translation contained some implications at the level of the postulates of parallels. Currently, many equivalences between postulates have been formalized thanks to the translation of the results obtained in GeoCoq, but also the construction of many notions included in the first part of the book "Metamathematische methode in des geometrie", allowing to demonstrate the Pythagorean theorem, secondary school level exercises, but also interpretations between different axiom systems such as those of Tarski and Hilbert.

Keywords: Formalized mathematics · synthetic geometry · interactive theorem proving · GeoCoq